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THE SYNTACTICAL ABILITIES OF NORMAL CHILDREN AND EDUCATIONALLY HANDICAPPED CHILDREN

by

Dixie Leigh Frasier

B.A., University of Montana, 1973

Presented in partial fulfillment of the requirements for the degree of

Master of Arts

UNIVERSITY OF MONTANA

1975

Approved by:

Chairman, Board of Examiners

Dean, Graduate School

June 15, 1975
Date

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The purpose of this study was to compare the syntactical performance of two groups of children on the Developmental Sentence Scoring (DSS) analysis (Lee, 1974). Fifteen elementary school children defined as educationally handicapped were matched on the basis of age, sex, socioeconomic status and receptive vocabulary I.Q. with 15 normally achieving children. It was hypothesized that the mean Developmental Sentence Score (DSS) of the educationally handicapped group would be significantly lower than that of the control group.

The obtained mean difference in DSS scores was found to be nonsignificant at the five percent level. Both groups were found to be well below the norms which have been established by Lee for the 6-0 to 6-11 age group.

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ACKNOWLEDGEMENTS

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To my mother for her encouragement, help and understanding.

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CHAPTER I

INTRODUCTION

There has been a growing emphasis in the current research on the population of those children who have difficulty learning in the regular classroom. Throughout the years, different definitions of the nature of the deficits exhibited by these children have resulted in such categories as: dull witted, culturally deprived, emotionally disturbed, minimally brain damaged, learning disabled, etc. (Kirk and Kirk, 1973). The emphasis has recently related many of these children's difficulties largely to perceptual deficits; it is theorized that such deficits do not allow the child to learn by the usual routes (Kirk and Kirk, 1973). Although there has been much speculation concerning the correlation of neurological impairment with perceptual difficulties, there has not been strong evidence to support this hypothesized relationship. In the research reported by Myklebust and Boshes (1969), there was almost an equal percentage of "normal" children as compared with children with learning disabilities who had abnormal electroencephalographic readings. Though identification of the deficits exhibited by these children has been of great concern, there is a current trend to reduce the amount of labeling of these children (Hammill and Bartel, 1975). For this reason, the term, educationally handicapped, has recently been adopted by some states and groups to replace the multitude of names which can become attached to a child. The legislature in the state of Montana recently adopted a definition of

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educationally handicapped which is used as a guideline for special education of these children. It states:

> An educationally handicapped person means a child or young adult under the age of twenty-one (21) years who requires special assistance to the extent that he cannot reasonably profit from the regular education program.
>
> An educationally handicapped person's learning disorders include, but are not limited to, conditions which have been referred to as visual perception handicaps, brain injury, minimal brain damage, dyslexia, behavioral maladjustments and emotional disturbances. An educationally handicapped person's disorders are not the result of problems with visual acuity, hearing impairment, physical handicaps, cultural or instructional factors, and mental retardation.

As a result of the difficulty in identifying and defining the underlying deficits in this population, many test materials have been developed to serve as diagnostic measures of a specific skill or collection of skills. These include such tests as the Wepman Auditory Discrimination Test (Wepman, 1964), Frostig Visual Perceptual Test (Frostig, 1964), Developmental Test of Visual-Motor Integration (Beery and Buktenica, 1967), Illinois Test of Psycholinguistic Abilities (ITPA) (Kirk, McCarthy, and Kirk, 1968), Southern California Perceptual-Motor Test (Ayres, 1969), McCarthy Scales of Children's Abilities (McCarthy, 1960), Porche Index of Communicative abilities for Children (Porche, 1974), and other, less formal, scales.

There have been repeated attempts in most school districts to identify the children who might exhibit educational handicaps, using the tests singly or in combination. Since these children exhibit different and varied deficits and skills, there are still some areas which have not been thoroughly explored (Kirk and Kirk, 1973). Although these children are often divided into groups defined as having auditory perceptual, visual perceptual, or motor difficulties, there is overlap in these areas. Although

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it could be assumed that a child with an auditory perceptual difficulty would have trouble understanding and using language, it cannot be assumed that a child with a visual perceptual difficulty will not have a delay in language. For this reason the entire population should be analysed to determine whether or not it is homogeneous; if not, it should be divided into separate groups seeming to show similar patterns of deficit for further testing.

The area of skill which has not been comprehensively assessed is oral syntax (Vogel, 1974). This skill is only a part of the integrated processes of language (Bloom, 1970). The acquisition of language depends on a child's receptive abilities. If these abilities are impaired, his expressive language performance is affected. In the assessment of the language processes, much emphasis has been placed on both the receptive and expressive aspects of language. However, the area of receptive language has been assessed more thoroughly. Expressive language measurement has usually been limited to phonology or the sounds in the language and the morphology or the small, meaningful word units and endings. It has been only recently that more studies of expressive syntax have resulted in some measures to assess the body of rules which are assumed to govern the way a child arranges words into sentences (Lee, 1971, 1974, 1975; Carrow, 1974). The syntactical level at which a child most easily understands as well as produces language would be highly useful information for educators involved with that child. Brown (1974) came to the conclusion that children performed much more adequately when test instructions and reading programs were geared to the child's linguistic competence. The assessment and description of

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syntax of oral language would permit educators to address themselves to remediation of the language deficiencies of those children with problems.

Early studies of the grammatical form in children's language have used traditional grammatical labels, i.e., pronoun, adverb, adjective, verb, etc., to classify aspects of language production (Stromzand, 1924; Fries, 1952). There are also descriptions of sentence length, complexity of sentence structure, and proportion of usage of differently structured sentences in various age levels (McCarthy, 1952). However, until recent development in theory of language, there hadn't been a widely accepted theory which provided a framework for analyzing syntactical development. The theory of transformational-generative grammar developed by Chomsky (1965) provided that basis. As a result, a few studies of syntactical development of children (Bloom, 1970; Brown and Fraser, 1964; McNeil, 1966) has yielded information concerning syntactical growth. These works were based on Chomsky's (1957, 1965) transformational grammar as a model for writing an individual grammar for each child. Using this information, authors of some tests have attempted to measure this area of language including: the grammatic closure subtest of the Illinois Test of Psycholinguistic Abilities (Kirk, McCarthy, and Kirk, 1968), The Evaluation of Child's Language Competence (Bellugi, 1968), The Northwestern Screening Test (Lee, 1969), and others. These tests, while effective as quick screening tests, have limited usefulness in predicting a child's performance in spontaneous speech. More comprehensive measures were needed to evaluate a child's consistency and frequency of usage and his ability to combine many transformation rules in a single utterance (Lee, 1974). As an

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alternative to the laborious writings of grammar, two different procedures have evolved in the effort to quantify syntactical development: 1) imitation of sentences of increasing syntactical complexity, and 2) linguistic analysis of elicited speech samples.

The first of these, sentence imitation, has yielded much information related to the development of language comprehension and expression in children. Although various authors have discussed this technique in terms of a model (Matthews, 1961; Halle and Stevens, 1962; Miller and Chomsky, 1963), Menyuk (1963) was one of the first who found that children who are developing language normally may not imitate sentences word-for-word which are more complex than those sentences which they produce spontaneously. Instead, when given the task of repeating, the child restructures the sentence in a manner reflecting his currently operating syntactical rules. The model sentence and the imitated sentence will often be quite similar but importantly different in structure. For example, the sentence, "She showed the girl the boy," may be repeated, "She showed the girl to the boy." Menyuk (1964, 1969) used this method to compare the grammar of children with delayed language and children with normally developed language skills. She found that the experimental groups formulated their sentences with fewer and more general rules than the normal group which used increasingly differentiated rules to generate syntactical structures. The children with deviant speech also repeated with more omissions of grammatical parts than did the normal group. For example, sentences with a verb phrase omission might include "This green" or "Where daddy." McNeil (1970) produced similar

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results by showing that children would imitate a sentence using the rules they know. Apparently they filter the sentence through their own productive systems. In the light of these experimental findings, Carrow (1974) developed a technique with standardized sentence stimuli and normative data against which syntactical responses of children can be compared. This measure, the Elicited Language Inventory, was designed to provide for the analysis of a broad repertoire of grammatical structures.

Critics have pointed out two important limitations related to the imitation method: 1) the length of the utterance and 2) the syntactical complexity. Menyuk and Looney (1972) found that both length and structure had a significant effect on the accuracy of sentence repetition in children with deviant language. Slobin and Welsh (1973) obtained similar findings. They indicated that structures which were beyond the child's ability were repeated back as though they were lists of unrelated words; the grammatical rules underlying each sentence were not understood and therefore could not be used by the child to duplicate the sentence. Overly complex sentences for such children become tests of short term auditory memory span.

The second method for the assessment of oral syntax, the analysis of oral language samples, has also been developed into a formal technique in recent years. Lee (1966) was one of the first to design a tool which could be used to analyze a child's syntactical growth when her developmental sentence types procedure was published. Along with its contributions, this method had several drawbacks. The primary limitation of this analysis was the restriction of its applicability only to younger populations or low language performers with emerging transformation types. The measure only

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assessed those early stages of development before the child attempted to use syntactical structures modeled after more complex adult speech language patterns. Secondly, utterances elicited from the child must be intelligible if they are to be scored. These restrictions resulted in limited usage of this procedure.

Lee and Canter (1971) developed an objective scoring procedure, Developmental Sentence Scoring (DSS). This analysis went beyond emerging transformations which are the result of the child's attempt to approximate adult syntactical structures, to include transformations which are represented by more and more complex and error-free syntactical productions by the child. For example, a child may say, "I go home," initially, but later in his syntactical development expand the phrase to, "I should be going home." Provisions for scoring such a range of utterances made DSS applicable to a range of children from 3 years, 0 months to 6 years, 11 months. Normative data is provided for this age range. The authors contended that, by analyzing a child's spontaneous tape-recorded speech sample, a clinician could compare the score to the norms to see whether expressive language development was age appropriate.

Two other authors have also developed methods of analysis for studying a child's syntactical development from samples of speech. Dever and Bauman (1973) developed the Indiana Scale of Clausal Development (ISCD) and Engler, Hannah, and Longhurst (1974) published the Linguistic Analysis of Speech Samples (LASS). The ISCD is based on a slot-filler grammar designed to classify the spontaneous utterances of children from 18-40 months. This method looks at the speech segment, then puts

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the words into the slot which contains the subject of the utterance, the slot which contains the verbal and the slot which contains the post-verbal. The analysis provided by LASS includes five basic sentence types for English, with the construction contained in the verb phrase as the criterion for classification. There were some drawbacks to the procedures which resulted in difficulty in applying them to a language sample.

One of the major practical difficulties in the way of language testing is the identification of efficient methods for analyzing samples of language behavior from children. Many methods of analysis have proved very cumbersome and time-consuming to administer. Longhurst and Schrant (1973) compared four methods for analyzing a speech sample; 1) Developmental Sentence Types, 2) Developmental Sentence Scoring, 3) Linguistic Analysis of Speech Samples, and 4) Indiana Scale of Clausal Development. They concluded that more objective methods were needed to describe and quantify the syntactical abilities of children. Although the authors felt that the analysis of ISCD and LASS handled the two language samples of their study most accurately, they found that the DSS procedure was the simplest of the four procedures to apply. They also found that no background information outside of the instructions was necessary in order to apply the procedure. By contrast, the ISCD and particularly the LASS were the most complex and required more study to apply. Finally, these authors concluded that DSS tended to describe the subject's performance at lower developmental levels than the other syntax quantifying procedures or selected measures of other aspects of language.

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Frasier and Lingel (1974) replicated the study by Longhurst and Schrant (1973); they concluded that the DST and DSS were the most useful and suitable tools for analyzing language samples for clinical purposes. This conclusion was based on the finding that DSS and DST: 1) provided clearer directions, 2) required the lesser amount of outside help, and 3) took less time to complete.

Since the development of these procedures, there have been few studies which have used the comparison of language samples of different populations to explore children's syntax in more depth. Morehead and Ingram (1973), using elicited language samples rather than imitated samples, included contextual information in the comparison of language samples of young children (18-36) months actively engaged in learning syntax, with deviant children at a comparable level of linguistic development. The authors found significant differences in the onset and acquisition time necessary for learning base syntax. Although the children with deviant language developed similar linguistic systems, they did not use them as creatively as the "normal" population. This is similar to the findings by Menyuk (1974).

There has been little research concentrating on detailed analysis of syntactical development in the educationally handicapped population. Rosenthal (1970) compared the linguistic competence of five learning disabled children and three controls on a measure based on Chomsky's theory of transformation types. Although he concluded that there were differences in sentence completion, imitation and negation, he did not define these factors. Apparently, the experimental group of children had difficulty finishing sentences, used more immature language when they imitated

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utterances and had difficulty forming the negative of a statement. Rosenthal also indicated that the experimental group had poorer articulation, were "nervous" and had longer utterances with more hesitations. The present author feels that these results are not representative since the study did not contain a research or statistical model nor provide any information concerning how the sample was scored. The author did not state what specific criteria were used for assessing the learning disabled population.

Vogel (1974) used nine measures to assess the syntactical abilities of normal and dyslexic children. They included the Northwestern Syntax Screening Test (Lee, 1969), the Grammatic Closure Subtest from the ITPA (Kirk, McCarthy, and Kirk, 1969), the Berry-Talbott Language Test (Berry, 1966), Developmental Sentence Scoring (Lee and Canter, 1971), Recognition of Melody Patterns (Vogel, in press), Recognition of Grammaticality (Vogel in press), Sentence Repetition Test (Vogel, in press). She found that the dyslexic children were significantly different from the normals on seven of the nine measures. It was found that as compared to ten per cent of the normal population, 99 per cent of the dyslexic children had syntactical deficiencies. The sentence repetition test was devised using the DSS procedure to order sentences in increasing syntactical complexity.

Research Goals

The recent development of some useful measures for assessing a child's syntactical development and the increasing interest in identifying deficits of children defined as educationally handicapped prompted this author to design a study in which syntax

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scoring techniques are used to measure the oral language skill of educationally handicapped children.

The purpose of this research was to investigate the performance of 15 children defined as educationally handicapped and a subject-matched control group of normal academic achieving children on Laura Lee's Developmental Sentence Scoring. The matching criteria were sex, age (plus or minus two months), socioeconomic status and general assessment of I.Q.

Knowing that a child's language abilities correlated with success in school, and since different measures have been developed to assess the syntactical aspect of language, a specific hypothesis concerning the oral syntactical development of the educationally handicapped population was stated.

It was hypothesized that there is a significant difference between the mean Developmental Sentence Score of normal and that of educationally handicapped groups. It was further hypothesized that the scores of the experimental group would be significantly lower than the control group.

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CHAPTER II

METHODS

Subjects: Selection Criteria

The subjects for this study were selected from the population of students enrolled in various school districts located in the Missoula, Montana area.

It was determined through available school or medical records and/or the opinion of the school personnel, that the subjects met the criteria listed below. Selection criteria for all subjects were those used by Lee (1974). All subjects:

1. Were white children between the ages of 6 years, 0 months to 6 years, 11 months.

2. Scored within one standard deviation of the mean I.Q. score (85-115) on the Peabody Picture Vocabulary Test.

3. Exhibited no sensory limitations such as hearing loss or visual impairment.

4. Had no noticeable speech problems which resulted in difficulty understanding the speech of the subject.

5. Came from middle income families as scaled on the basis of occupation of breadwinner; ratings three, four, and five on the seven-point Warner scale for rating occupations (Warner, Meeker, and Eels, 1963). In the event that both parents were employed, the father's occupation was used as the basis for the Warner rating.

6. Were from monolingual homes where standard English was spoken.

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The selection criteria for the educationally handicapped group (N=15) included all of the above as well as the following criteria:

1. All subjects were enrolled within the public school system.

2. All subjects had been (a) identified as educationally handicapped as defined by the state definition, and (b) were receiving some management in a resource room or other special assistance for more than one hour a week to help compensate for their difficulties.

Subjects: Matching Criteria

The subjects were matched on the following criteria:

1. Each subject in the experimental group was matched to within plus or minus 7 I.Q. points on the Peabody Picture Vocabulary Test, Form B, to a subject in the control group.

2. The age of each subject in the experimental group was plus or minus 2 months of a subject in the control group.

3. The rating of parental occupation was within the same level (level 3 or 4 or 5) according to the occupational rating chart in Warner, Meeker, and Eels' Index of Status Characteristics.

4. Whenever possible, matched subjects were obtained from the same classroom. In those cases where this was not possible, subjects were selected from schools sampling subpopulations of Missoula with highly similar programs and economic backgrounds.

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The author recognized the limitations of the use of the Peabody Picture Vocabulary Test as a measure of I.Q., but for the purpose of this study, it was utilized as a general assessment device to assure that the subjects were functioning within normal limits.

When necessary, parental release forms were sent to each parent of those children who were involved in the testing. When a sample was unobtainable due to the child's behavior, this was noted and another subject was sought.

Procedure

Each child was required to have a Peabody Picture Vocabular Test administered by the author or a speech therapist in the public school. The Peabody Picture Vocabulary Test was administered within a two-week period for all subjects.

Each language sample was elicited by the author in various settings in the schools which participated in the study. The sessions in which the language samples were recorded were kept as uniform as possible by using the procedure outlined by Laura Lee, but with the use of different stimulus materials. One set of toys, which included flexible farm animals with movable fences, was presented first to allow the child to become accustomed to the situation. A set of "I Wonder" pictures (W1, 3, 5, 8, 9, and 11) from the Peabody Language Development Kit were used to elicit the oral language samples. Elicited samples were taped on cassette tape during a single session with each subject. A total of 75 different sentences were taken from each subject, using the last 50 sentences as the corpus to be scored.

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The pictures were presented and the examiner asked each subject, "What is happening here?" Signs of encouragement such as "Yes," "Really," or nodding the head, as well as occasional prompting, such as "Is there more?" or "Can you tell me more?" were given as the subjects responded.

The sentences of the language sample were transcribed from the cassette tape onto a score sheet as illustrated by Lee (1974). Each sample was analyzed and scored according to the reweighted scoring procedure outlined by Lee (1974).

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CHAPTER III

RESULTS

Fifteen elementary school children who had been identified by school personnel as educationally handicapped were matched with 15 "normal" children on age, sex, father's or mother's occupation, and vocabulary I.Q. as determined by the Peabody Picture Vocabulary Test. Each of the 30 subjects was between the chronological ages of six years, zero months, and six years, eleven months. A language sample was elicited from each child. A Developmental Sentence Score (DSS) was obtained from each sample according to the procedure outlined by Lee (1974).

The major hypothesis of this study was that there would be a significant difference between the mean Developmental Sentence Score (DSS) of the normal and that of the educationally handicapped group. It was further hypothesized that the score of the experimental group would be significantly lower than that of the control group. The Developmental Sentence Scores of the 30 subjects are listed in Table 1. The average difference between these scores is .44. Using the *t*-test for correlated groups, this difference was found to be not significantly greater than zero ($t = .777$; $t_{.05} = 1.701$). This *t*-ratio does not, therefore, suppport the experimenter's hypothesis that the mean DSS of the two research groups would differ.

In a comparison of the mean DSS of each of these two groups to the norms published by Lee (1974), both the experimental and control group fall below the tenth percentile for the 6-0 to 6-11 age group. The control group's mean DSS of 5.85

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Table 1

Developmental Sentence Scores and Differences by Subject Pairs

Subject Pair	Control	Experimental	Difference
1	6.68	5.8	.88
2	7.36	6.86	.5
3	3.5	7.6	-4.1
4	6.98	5.62	1.36
5	8.02	3.88	4.14
6	3.92	4.5	- .58
7	7.5	5.64	1.86
8	6.06	8.72	-2.66
9	3.7	5.22	-1.52
10	7.42	3.94	3.48
11	4.68	5.3	- .62
12	6.62	6.12	.5
13	7.02	4.96	2.06
14	4.36	4.4	- .04
15	3.94	2.6	1.34
Mean =	5.85	Mean = 5.41	Mean = difference .44
			t = .777
			.05

falls in the 25th percentile of the 3-0 to 3-11 age group, whereas the mean DSS of 5.41 for the experimental group falls within the 10th percentile for that same age group. No child in the present study achieved a score which fell within his age appropriate norms. The highest score (8.72) made by a child in the study falls at the median for the 4-0 to 4-11 age group in the Lee study.

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Further analysis of the distribution of subscores which made up the total DSS scores was done in an effort to see if there were some trends which might reveal some differences between the experimental and control populations. The number of responses in each syntactic category, the sum of the points obtained for those responses and the number of errors in each category were calculated for the control and experimental groups and are shown in Figures 1, 2, and 3. As these graphs reveal, both groups produced highly similar scores in each of the nine syntactic categories and there were no practically important differences between the two groups on any of the subscores.

Interjudge reliability was calculated on the scoring of the utterances of one pair of children (100 utterances) by two judges. Two coefficients of reliability were completed, one for the 50 utterances produced by each child. The coefficients of reliability were .88 and .86. It is the examiner's opinion that the measuring device used in scoring this data was sufficiently reliable for the purposes of this study and the procedures sufficiently repeatable as to make it a useful tool.

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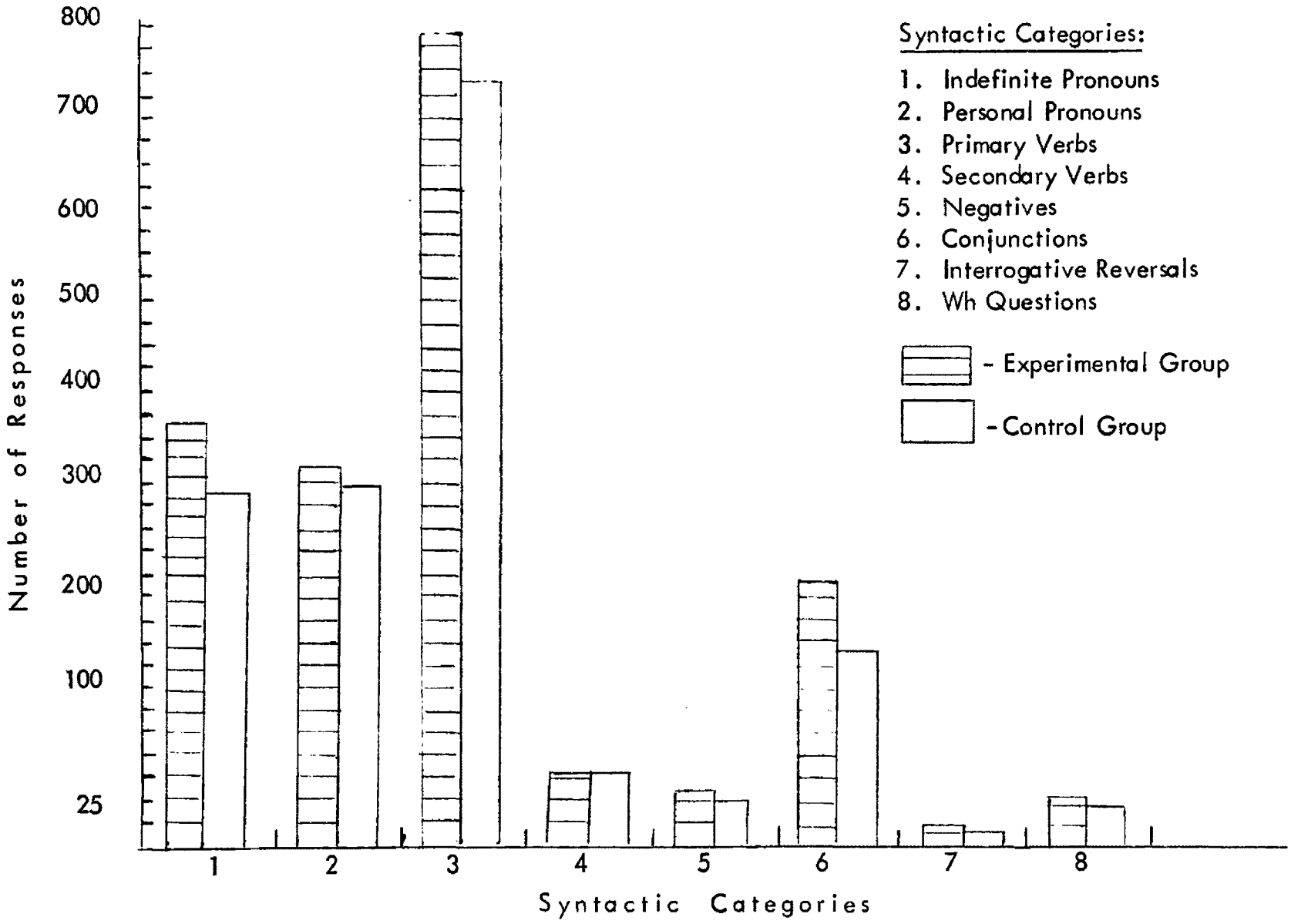

Figure 1. Number of Responses Produced in Each Syntactic Category by the Experimental and Control Groups

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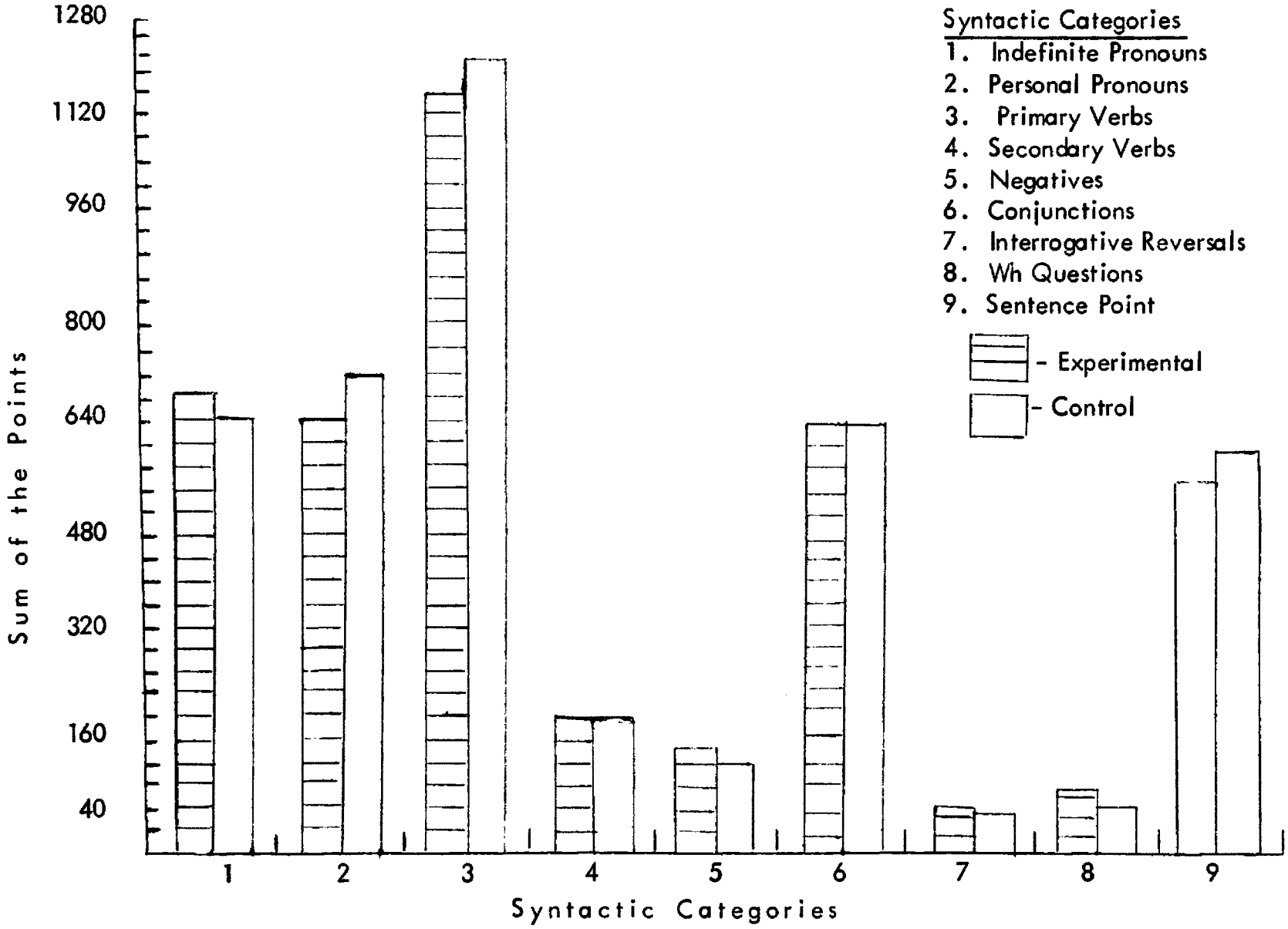

Figure 2. Sum of the Points Obtained in Each Syntactic Category by the Experimental & Control Groups

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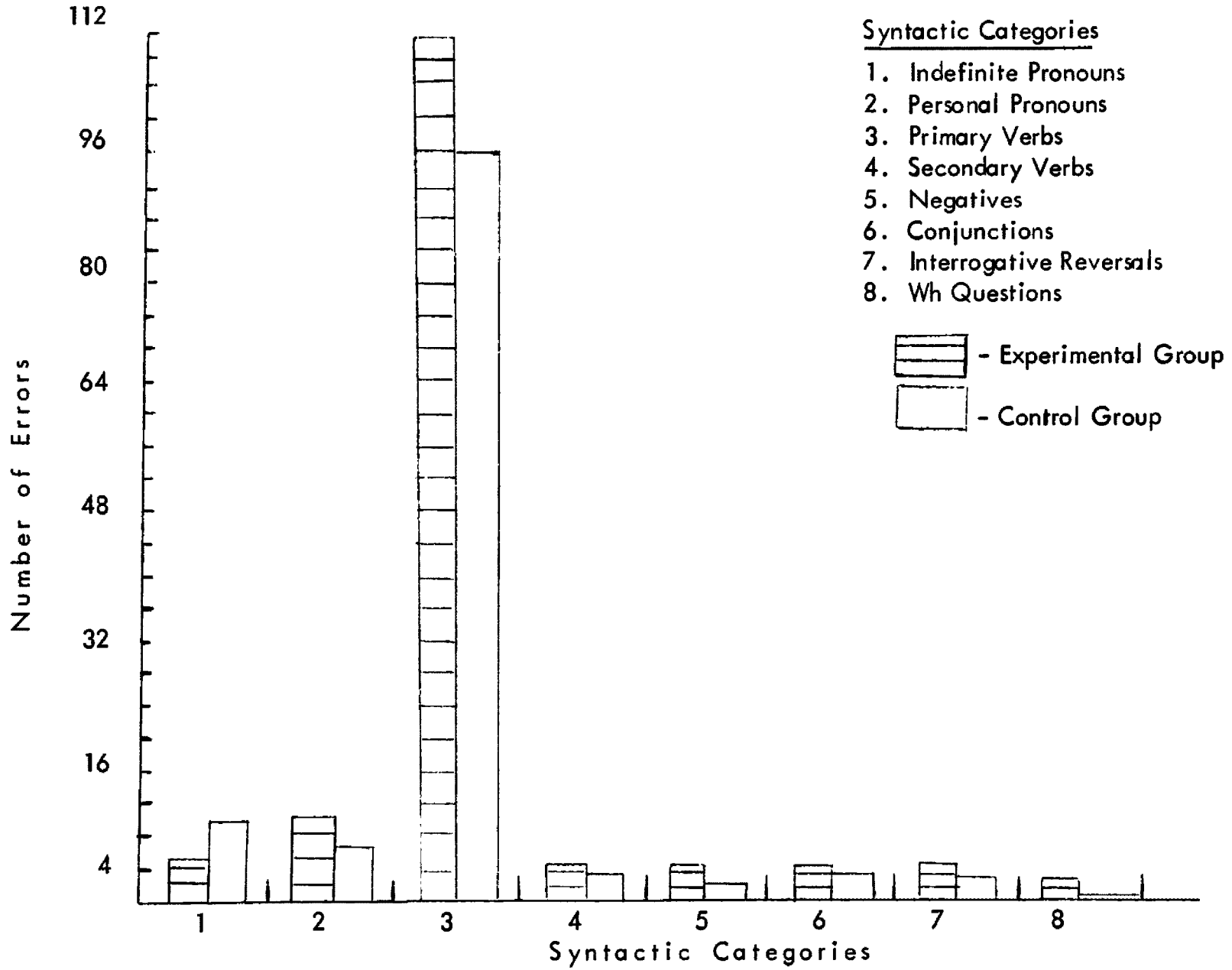

Figure 3. The Number of Errors Produced in Each Syntactic Category by the Experimental & Control Groups

CHAPTER IV

DISCUSSION

The results of this study indicate that the syntactical abilities, as measured by Lee's Developmental Sentence Scoring Procedure, of the educationally handicapped children in this sample do not differ significantly from the abilities of a comparable group of normally achieving children. There are some factors which may account for the fact that the educationally handicapped group scored similarily to the matched "normal" group. These factors include: 1) the educationally handicapped group may include subgroups with linguistic problems and some without, those without largely cancelling the effects of those with minor linguistic problems; 2) the lack of uniform testing and identification procedures for identifying educationally handicapped children may produce a much more heterogenous experimental group than would be desirable for this study; 3) the educationally handicapped children may receive certain advantages from special assistance, and; 4) the method for eliciting language samples may have failed to evoke children's maximal levels of language skill and, thus, may not have revealed differences which may be present.

It was pointed out at the beginning of this study that different learning problems are categorized under the heading of educationally handicapped, including visual perceptual, auditory perceptual, or motor difficulties. This study dealt with the educationally handicapped population in general rather than with children who had been identified as having difficulty in specific subcategories. If the children

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were more closely identified in terms of their specific weaknesses, the Developmental Sentence Scoring procedure might detect linguistic problems in some of these. Although there were several children in the experimental group who received low scores, the background information was neither available nor sufficient to generate a specific diagnosis for these children, identifying diagnostic subgroups which might be examined in future studies. The possibility also exists that some of the members of the control group have some weak areas which may have not been noticed by the teacher. Since all of the members in the control group were considered "average" students by the teachers, it is possible that some of these children may have had some areas of linguistic difficulty but that these were not considered to be as great as to cause school personnel to classify these children as educationally handicapped.

The second factor which may account for the nonsignificant results involves the lack of uniform identification procedures between school districts. Since this sample was selected from different districts, it may have been much more heterogeneous than is desirable.

Another variable which may have reduced differences between the two groups is the amount of special help and remediation the experimental group received in comparison to the control group. The majority of the educationally handicapped children selected for this study had begun some type of remediation procedures shortly after they entered school. With the constant exposure to different people and more adult language models, these children may have developed more expressive language through the year. However, since the control children had not been exposed to as

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many different people and situations, they not only may have missed the extra language stimulation but also may have been more reluctant to speak to a strange person. If the educationally handicapped children were routinely identified at the beginning of the year and language samples elicited shortly afterwards, significant differences from educationally unexceptional children in syntatical skill might be apparent.

The final factor which may influence future studies involving the elicitation of language samples is the method used for evoking the language sample. In this research project the child was asked to indicate what was happening in a series of action pictures. In at least two out of seven pictures, the examiner asked "What do you think happened?" in order to encourage the use of the past tense by the child. It is quite likely that this statement, as well as the comment "What do you think will happen?" directs children to answer using similar verb tenses, if they have mastered those forms. Consistent use of simpler verb forms by the examiner does not create opportunity to discover whether the child is capable of higher level forms. There is, thus, the need to provide a controlled variety of prompting utterances in studies of this kind.

Although the differences between the two groups were not significant, it is relevant and surprising that the mean Developmental Sentence Scores for both groups were well below the norms established by Lee for the 6-0 to 6-11 age group. This observation implies either that norms which have been established by Lee are not applicable to children in this geographical area or that the children in this study

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are significantly delayed in expressive oral syntactical abilities. Since the criteria for selection of the normal children in this study were the same which Lee used for the children in her normative study, the results may imply that there is a need for more normative studies with this procedure. This observation is in agreement with the findings reported by Longhurst and Schrandt (1974) who suggest that Lee's norms, which were published in 1971, were elevated. Although Lee has since then expanded the number of children in each age group to 40, the results of this study suggest that these norms may not be applicable to all geographical areas. Lee's normative population was selected from urban midwest schools representing a middle to upper class group whereas the population for this study was selected from Missoula and from rural schools representing an upper lower to middle class group. It could be hypothesized that the amount of language stimulation received by Lee's normative group was significantly greater than that usually available to the children in this study. Although it seems unlikely that middle class children in western Montana should be inferior to midwest urban children by Lee's language measures, this is what the data suggests. If that should be substantiated in future studies, educators in this region may need to interpret with caution test results sampling language skills and using norms derived from studies of midwest children.

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CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this study was to compare the syntactical performance of two groups of children on the Developmental Sentence Scoring analysis. Fifteen elementary school children defined as educationally handicapped were matched on the basis of age, sex, socioeconomic status and receptive vocabulary I.Q. with 15 normally achieving children. A language sample was elicited from each child and scored according to the procedure outlined by Lee (1974).

It was hypothesized that not only would the Developmental Sentence Scores for the two groups differ but also that the score of the educationally handicapped group would be significantly lower than that of the control group. The obtained mean difference in DSS scores was found to be nonsignificant at the five percent level, thus failing to support the experimenter's hypothesis. Further analysis of the nine scored syntactic categories which made up the total DSS score suggests that the two groups produced highly similar scores. Both groups were found to be well below the norms which have been established by Lee for the 6-0 to 6-11 age group.

The results of this study were discussed in terms of different factors which might account for the nonsignificant results. These factors included: 1) the results of looking at the entire spectrum of educationally handicapped rather than more homogenous subgroups; 2) the lack of uniform identification measures used to detect the educationally handicapped in the schools also probably contributes to

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the hetrogeneity of that group; 3) special assistance given to the educationally handicapped group may erase initial linguistic differences and; 4) the methods used for eliciting the language samples may not have encouraged the use of children's maximal language skills.

The significance of the reduced mean scores of the two groups of subjects as compared to the norms developed by Lee was discussed. It was suggested that the normative data for the DSS procedure should be obtained from children in different geographic locations. Further, more sensitive socioeconomic measures should be used to assure close matching in important language-stimulation respects to Lee's normal subjects.

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APPENDIXES

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APPENDIX A

Table 2

Subject Pair Data on Age, Sex, Warner Rating and Receptive Vocabulary I.Q Score

	Experimental				Control Group			
Pair	Age	Sex	I.Q.	Warner Rating	Age	Sex	I.Q.	Warner Rating
1	6-8	F	89	5	6-6	F	93	5
2	6-11	M	104	3	6-9	M	106	3
3	6-11	M	108	3	6-11	M	115	4
4	6-8	M	100	5	6-10	M	102	4
5	6-10	M	112	4	6-8	M	112	4
6	6-10	F	97	4	6-8	F	91	5
7	6-5	F	89	5	6-7	F	89	4
8	6-9	F	110	4	6-10	F	115	4
9	6-11	M	104	4	6-11	M	111	4
10	6-11	F	87	4	6-10	F	94	5
11	6-8	M	95	5	6-8	M	93	4
12	6-11	M	114	4	6-9	M	115	4
13	6-7	M	88	5	6-9	M	94	5
14	6-11	M	112	4	6-11	M	114	4
15	6-11	M	90	3	6-11	M	97	3
Mean:	6-7.9		99.9	4.1	6-7.7		102.7	4.1

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APPENDIX B

Table 3

Number of Scorable Utterances Produced in Each Syntactic Category of the Developmental Sentence Scoring Procedure

Control Group	Syntactic Categories							
	1	2	3	4	5	6	7	8
1	23	40	49	1	1	6	0	3
2	26	33	59	4	4	16	0	1
3	6	7	47	5	1	4	0	0
4	22	13	74	5	3	20	0	0
5	16	9	46	1	1	4	0	0
6	22	11	41	4	1	3	1	1
7	23	35	44	9	4	12	4	3
8	16	14	46	5	2	19	2	1
9	12	10	47	0	1	5	1	1
10	18	34	60	3	7	10	0	5
11	20	8	50	4	0	9	0	0
12	38	38	55	3	5	3	2	7
13	19	12	65	3	1	20	0	1
14	10	10	48	3	3	5	0	0
15	5	13	52	2	0	10	0	0
Σx:	276	287	783	52	34	146	10	23

Categories

1. Indefinite Pronoun
2. Personal Pronoun
3. Primary Verb
4. Secondary Verb
5. Negative
6. Conjunction
7. Interrogative Reversal
8. Wh Question

(continued)

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Table 3 (continued)

Experimental Group	Syntactic Categories							
	1	2	3	4	5	6	7	8
1	27	31	39	8	5	4	3	4
2	28	24	58	4	2	15	0	1
3	23	32	60	2	2	14	1	4
4	39	21	48	12	1	7	0	11
5	24	31	54	2	10	15	6	4
6	13	11	51	3	0	11	0	0
7	20	23	27	1	3	10	2	2
8	25	23	70	3	4	22	0	1
9	20	22	54	0	0	14	0	1
10	21	3	40	2	1	10	0	0
11	16	20	51	10	2	10	1	3
12	21	17	53	0	0	8	1	5
13	23	24	48	0	0	25	1	2
14	41	13	45	1	0	7	0	0
15	6	10	39	2	0	1	0	0
Σx:	347	305	737	50	30	183	15	38

Categories

1. Indefinite Pronoun
2. Personal Pronoun
3. Primary Verb
4. Secondary Verb
5. Negative
6. Conjunction
7. Interrogative Reversal
8. Wh Question

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APPENDIX C

Table 4

The Sum of the Scorable Utterances Produced in Each Syntactic Category of the Developmental Sentence Scoring Procedure

	Syntactic Categories								
	1	2	3	4	5	6	7	8	9
Control Group 1	58	90	112	3	4	27	0	6	34
2	60	86	88	16	19	59	0	2	41
3	21	16	54	21	4	18	0	0	42
4	65	38	100	14	11	96	0	0	40
5	46	23	64	6	4	14	0	0	37
6	38	23	56	12	4	9	4	2	42
7	51	59	84	27	20	60	18	11	41
8	37	49	65	8	8	85	12	2	36
9	30	22	65	0	4	20	1	2	39
10	35	95	117	9	25	43	0	10	37
11	54	24	60	12	0	42	0	0	43
12	55	84	82	7	20	14	5	25	36
13	49	36	101	9	7	108	0	2	39
14	36	25	65	8	13	24	0	0	43
15	13	31	67	5	0	32	0	0	47
Σx:	648	701	1180	157	143	651	40	40	597

Categories

1. Indefinite Pronoun
2. Personal Pronoun
3. Primary Verb
4. Secondary Verb
5. Negative
6. Conjunction
7. Interrogative Reversal
8. Wh Question
9. Sentence Point

(continued)

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Table 4 (continued)

Experimental Group	Syntactic Categories								
	1	2	3	4	5	6	7	8	9
1	47	49	85	25	20	15	3	8	38
2	50	62	114	12	9	58	0	2	35
3	35	59	117	5	9	62	6	8	42
4	39	43	58	49	4	30	0	11	45
5	36	55	74	10	49	71	23	11	41
6	35	32	68	14	0	33	0	0	40
7	46	44	51	3	9	41	7	4	33
8	69	53	98	9	19	141	0	2	38
9	42	49	74	0	0	53	0	2	37
10	67	8	52	6	4	32	0	0	32
11	36	34	85	18	11	33	6	3	37
12	61	38	90	0	0	42	4	16	43
13	54	54	66	0	0	25	1	9	35
14	59	31	54	3	0	28	0	0	44
15	16	22	53	5	0	5	0	0	37
Σx:	674	643	1139	159	134	649	50	72	577

Categories

1. Indefinite Pronoun
2. Personal Pronoun
3. Primary Verb
4. Secondary Verb
5. Negative
6. Conjunction
7. Interrogative Reversal
8. Wh Question
9. Sentence Point

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APPENDIX D

Table 5

The Number of Errors Produced in Each Syntactic Category of the Developmental Sentence Scoring Procedure

		Categories								
		1	2	3	4	5	6	7	8	9
Control Group	1	1	0	9	0	0	2	0	0	16
	2	1	0	2	1	0	0	0	0	9
	3	0	0	6	0	0	0	0	0	8
	4	3	1	7	0	0	1	0	0	10
	5	0	0	8	0	0	0	0	0	13
	6	0	1	3	0	0	0	0	0	8
	7	1	0	8	0	0	0	0	0	9
	8	1	0	6	0	0	0	0	0	14
	9	0	2	9	0	0	0	0	0	11
	10	1	0	9	0	0	0	0	0	13
	11	0	0	7	1	0	0	0	0	7
	12	1	1	5	0	0	1	1	0	14
	13	1	1	6	0	0	0	0	0	11
	14	0	0	5	0	0	1	0	0	7
	15	0	0	2	0	0	0	0	0	3
	Σx:	10	6	92	2	0	5	1	0	153

Categories

1. Indefinite Pronoun
2. Personal Pronoun
3. Primary Verb
4. Secondary Verb
5. Negative
6. Conjunction
7. Interrogative Reversal
8. Wh Question
9. Sentence Point

(continued)

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Table 5 (continued)

Experimental Group	Categories								
	1	2	3	4	5	6	7	8	9
1	0	1	8	1	0	0	0	0	12
2	2	4	5	1	0	0	0	0	15
3	1	0	4	0	0	0	0	0	8
4	0	0	3	0	0	0	0	0	5
5	0	0	6	0	0	0	2	0	9
6	1	1	6	0	0	0	0	0	10
7	0	0	13	1	0	1	0	0	17
8	1	0	1	0	0	0	0	0	12
9	0	1	12	0	0	0	0	0	13
10	0	0	14	0	0	2	0	0	18
11	0	1	6	0	0	0	0	1	13
12	0	0	9	0	0	0	0	0	7
13	0	1	7	0	2	1	2	0	5
14	0	0	4	0	0	0	0	0	6
15	0	0	12	0	0	0	0	0	13
Σx:	5	9	110	3	2	4	4	1	163

Categories

1. Indefinite Pronoun
2. Personal Pronoun
3. Primary Verb
4. Secondary Verb
5. Negative
6. Conjunction
7. Interrogative Reversal
8. Wh Question
9. Sentence point

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APPENDIX E

The following is the parental permission form which was sent to the parents of the children for whom permission was required:

Dear Mr. and Mrs. _____

On _____ and _____ of next week, I will be sampling the language of some of the first graders in _____ class. My interpretation of these samples will be helpful to the teacher in planning the program for _____ next year.

If you have any objections to my taking an oral language sample from your child, please check the box below and send this form back to

_____ before _____.

☐ I do not want a language sample taken from my child.

Sincerely,

Dixie Frasier

Dixie Frasier

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